

Questions for NEPEC

At the meeting of 16-17 October, 2017

The USGS requests that the NEPEC prepare a letter report that responds to the following points. (As always, we also welcome any additional commentary or advice that the Council may wish to offer.)

1. The SESAC has cautioned that, given the number of EHP priorities competing for fixed funds, USGS investment in operational earthquake forecasting should be in response to user needs. At this meeting we will summarize the work we've done to learn about user needs and the strategic path that we've designed light of those findings. We would appreciate commentary from the Council on whether our strategic path appropriately constructed and scaled to deliver operational forecasts to meet user needs.
2. At this meeting we will discuss the coordination of forecasting and communication in California and in the Cascadia region, these discussions being prompted by USGS plans for a nation-wide forecasting system and by the Cascadia earthquake communication plan received from CREW. We would appreciate advice on how the responsibilities for composing and communicating forecasts should be coordinated among the various responsible agencies and councils.
3. We would like the Council's comments on the Cascadia earthquake communication plan, including the recommendation that two standing committees be formed: a scientific body (CREEC, suggested to be a NEPEC subcommittee), and a risk communication group (CERC).
4. In your December, 2015 report, you stated: *"NEPEC is convinced that some version of an ETAS approach will be an improvement over the RJ [Reasenbergs & Jones, 1989] method for OEF and that the USGS should continue pursuing, developing, and testing an ETAS method. Before it replaces the RJ method in OEF, NEPEC would like to see the results of testing the method, including the satisfactory performance of well-developed codes to implement it in OEF, and a demonstration that ETAS performs better than the RJ approach."* We seek your recommendation on whether our implementation of ETAS is scientifically suitable for replacement of RJ as the basis for operational temporal and spatiotemporal forecasts.
5. Also in your 2015 report, you provided useful commentary about the UCERF3-ETAS forecasting method, including: *"NEPEC was intrigued by the ongoing effort to develop [that] time-dependent earthquake forecasting capability using a combination and extension of ETAS and the UCERF3 time-independent model.... Such an approach clearly needs more testing and evaluation before it can be considered for moving into an operational mode. However, if that or some similar system could be demonstrated to have practical value, NEPEC would likely endorse it enthusiastically."* We would like your recommendations on whether the UCERF3-ETAS method, as currently formulated, documented and tested, is scientifically suitable for use by USGS, NEPEC and CEPEC in supporting operational earthquake forecasting in California. More

generally, your feedback on what level of documentation and testing would be deemed necessary and sufficient for such purposes would be helpful.